

## REMARKS

This amendment responds to the second office action dated 16 April 2003 in which claims 1-44 were pending and finally rejected. This amendment is submitted as a request for continued examination (RCE) of all of claims 1-44. Claims 1, 6, 7, 9, 10, 12, 16, 18, 19, 21, 26-29, 33, 35 and 38-44 have been amended. Claims 2-5, 8, 11, 13-15, 17, 20, 22-25, 30-32, 34, 36 and 37 are unchanged by this RCE amendment.

This rejection of claims 1-44 is respectfully traversed and reconsideration requested.

### Prosecution Review

A review of the prosecution of this application is helpful. The application as filed contained claims 1-44 which were examined in the first office action and given a 35 U.S.C. §103 rejection relying for the most part on the same art (primarily Tanaka and Van der Pol) used by the Examiner in the second office action. Independent claims 1 and 26 were rejected in the first office action over Tanaka and Van der Pol for much the same reasons asserted in the second office action. In the first amendment, the Applicants traversed the 103 rejections of independent claims 1 and 26 over Tanaka and Van der Pol; argued that it would not be obvious to combine the two references as proposed by the Examiner; and further argued that there was no evidence presented by the Examiner of motivation to combine. The Applicants' first amendment was accompanied by an affidavit of Dr. Gary E. Pawlas who directed the group responsible for the research design and development of a Coriolis flowmeter employing PFA flow tubes embodying the present invention. Dr. Pawlas' affidavit asserts that the Tanaka and Van der Pol patents would have been of no use to him in his development. It further asserts that the claims contain many structural innovations that would not have been obvious to his group even if they had knowledge at that time of Tanaka and Van der Pol. Dr. Pawlas' well reasoned pervasive affidavit set forth the many obstacles, trials and tribulations encountered by his group in the research design and development of the Applicants' Coriolis flowmeter using PFA flow tubes.

The Examiner's response to the Applicants' arguments in the first amendment is the confusing statement in paragraph 10 in the second office action which asserts:

Applicants' arguments with respect to claims 1-44 have been considered but are moot in view of the new grounds of rejection based on amended claims.

This statement by the Examiner is literally true but does nothing to advance the prosecution of the application since the claim changes made by the first amendment were not extensive or complex. As a result, most of the claims now presented for reconsideration in this RCE amendment contain the identical issues argued by the Applicants in their first amendment. Since the Examiner made no effort to advance the prosecution of the application by addressing these issues in the second office action, the Applicants now have no choice but to reargue the same issues in this RCE amendment.

The second office action makes no mention of the affidavit of Dr. Pawlas. As a result of this failure by the Examiner to comment on Dr. Pawlas' affidavit, it is not known whether the affidavit was lost in the mail, was never received by the Examiner or whether the Examiner did receive the affidavit but, for some unknown reason, chose not to respond to it.

In the event the affidavit of Dr. Pawlas was lost in the mail or not received by the Examiner, the Applicants hereby enclose a replacement. If Dr. Pawlas' affidavit was received by the Examiner, it would appear that the Examiner's failure to consider and comment upon the affidavit in the second office action violated the provisions of MPEP §716. Specifically, §716.01(b) states, in essence, that evidence traversing rejections must be considered by the Examiner whenever present.

"All entered affidavits, declarations and other evidence traversing rejections are acknowledged and commented upon by the Examiner in the next succeeding action. . .where the evidence is insufficient to overcome the rejection, the Examiner must specifically explain why the evidence is insufficient. General comments such as the declaration lacks technical validity or the evidence is not within the scope of the claims without an explanation supporting such findings are insufficient."

It goes without saying that the Examiner failed to comply with this requirement in the second office action.

MPEP §716.01(d) is instructive and states, in essence, that when an Applicant submits evidence which traverses a rejection, the Examiner must reconsider the patentability of the claimed invention

"facts established by a rebuttal evidence must be evaluated with the facts on which the prima facie case was reached not conclusion itself. . . all the competent rebuttal evidence taken as a whole should be weighed against the evidence supporting the prima facie case.

Since the Examiner failed to comment upon Dr. Pawlas' affidavit, it cannot be denied that the Examiner failed to comply with §7.16.01(d) of the MPEP.

A copy of Dr. Pawlas' affidavit is included with this RCE amendment for the Examiner's immediate consideration in the next office action. Any failure by the Examiner to consider and specifically address the facts and issues asserted by Dr. Pawlas in this affidavit will be deemed an admission by the Examiner that the affidavit facts are true and that all claims relevant to such facts are deemed to be allowable.

The Examiner's attention is specifically directed to the last portion of MPEP §1716.01 which holds a response by the Examiner to be inadequate if it merely asserts:

The arguments, statements, facts and issues raised by the Rule 132 affidavit have been carefully considered but are deemed to be unpervasive.

The Examiner is advised that Dr. Pawlas is no longer an employee of Micro Motion, Inc. and therefore has no interest in the outcome of this case as mentioned in §716.01(c) of the MPEP.

#### Comments Regarding Rejection of Independent Claims 1 and 26

Claims 1 and 26 are the only two independent claims in the application. Each received a 35 U.S.C. §103 rejection over Tanaka in view of Van der Pol. Claim 1 is amended by this RCE amendment to restore claim 1 to its wording as originally filed except that "means" has been replaced by "apparatus." Other than this amendment, claim 1 is now the same as claim 1 as filed. Claim 26 has been revised with minor changes directed to structural clarifications.

Claims 1 and 26 are substantially the same as original claims 1 and 26. Since the second office action relied upon the same combination of Tanaka and Van der Pol, the issues regarding amended claims 1 and 26 are similar to the issues discussed in the first amendment. Therefore, Applicants' arguments presented in the first amendment are hereby incorporated by reference into this amendment to the same extent as if fully set forth herein in order to avoid undo repetition.

The second office action repeated the position taken by the Examiner in the first office action by rejecting independent claims 1 and 26 over Tanaka in view of Van der Pol. Rejected claim 1 is changed by this RCE amendment to delete material on lines 9 and 10 which recited:

“said flow tube apparatus has high flexibility and also has a stiffness substantially lower than flow tube apparatus formed of metal or glass.”

This deleted material has been moved to amended claim 28. This change leaves the RCE amended claim 1 in the same condition as claim 1 as filed except for the change of each occurrence of “means” to “apparatus.”

The Examiner’s final rejection of claim 1 is traversed both with respect to the former version of the claim (prior to the RCE) as well as the currently amended version of claim 1. Both versions of claim 1 clearly distinguish from the cited art. The Applicants traverse the Examiner’s rejection on three separate grounds.

The first ground of traverse is that Van der Pol is not an enabling reference for the purposes used by the Examiner. The second ground of traverse is that there would be “zero” motivation by a person skilled in the art to combine Van der Pol with Tanaka as asserted by the Examiner. The third ground of traverse is that the Examiner’s rejection does not meet the requirements of a 35 U.S.C. §103 rejection as set forth in the applicable MPEP sections and case law.

With respect to the first ground for traverse, the Van der Pol patent discloses a thick walled flow tube (4) which is sufficiently thick and rigid so that most of the axial length of the flow tube does not respond to Coriolis vibrations. Van der Pol asserts that this prevents the center of mass of the flow tube from shifting. The longitudinal center portion of the Van der Pol flow tube is fitted with inward radial groves into which the driver and pickoffs are placed. The portion of the flow tube proximate the groves is sufficiently flexible so that only this axial center of the flow tube is responsive to Coriolis vibrations. The remainder of the longitudinal portion of the flow tube is thick and substantially non-responsive to Coriolis vibrations.

It should be noted that Van der Pol is not directed to a Coriolis flowmeter. No Coriolis flowmeter structure beyond the flow tube segment is shown on the Van der Pol drawings. Van der Pol is limited to what he discloses and claims, namely, a thick walled flow tube segment which is stiff and not flexible and is unresponsive to Coriolis

deflections except for the longitudinal center portion proximate the grooves of his flow tube.

Column 4, lines 30-34 of Van der Pol state "that the thick walled flow tube (4) could consists of metal or various plastics such as PFA." His dependent claims 3 and 14 recite a flow tube formed of various plastics including PFA. Van der Pol does not state why a thick flow tube segment having grooves and formed of PFA would be desirable over a thick walled metal flow tube. He also does not teach how his thick walled flow tube segment with grooves could be incorporated into an operating flowmeter.

For the above reasons, Van der Pol is non-enabling with respect to the disclosure of a Coriolis flowmeter having flow tubes formed of PFA as required by the Applicants' claims. An unsupported assertion that a flow tube could be formed of PFA to construct a Coriolis flowmeter without more is not enabling as to the entirety of the Coriolis flowmeter. The reason for this is that the use of PFA in a Coriolis flowmeter presents many problems of research design and development to use PFA material for a flow tube rather than conventional metal material. The reasons for this are persuasively set forth by Dr. Pawlas in his Rule 132 Affidavit and are discussed in detail in the Applicants' prior amendment.

The second ground of traverse of the 103 obviousness rejection of claims 1 and 26 is that there would be "zero" motivation by a person skilled in the art to which the present invention pertains to consider or attempt to combine the teachings of Van der Pol and Tanaka when creating the Coriolis flowmeter as taught by the present invention. Applicants' flow meter has a small diameter, thin walled, and highly flexible flow tube that is formed of a substance that does not leach ions from the flow tube material to the process material that flows through the flow tube. It is submitted that one skilled in the art and faced with the challenge of this assignment would not be motivated to consider the thick walled Van der Pol flow tube which is inflexible to Coriolis deflections for most of its length. The fact that Van der Pol asserts, without teaching, that his flow tube segment could be made of PFA, is not enough since the resulting PFA flow tube would, of necessity, be thick walled and relatively inflexible over most of its length and would be required to have radial slots in its center portion to detect Coriolis responses. Such a flow tube would not meet the requirements that

Applicants' flow tube be thin walled and flexible. It is submitted by the Applicants that Van der Pol is not enabling with respect to the use of PFA in a Coriolis flowmeter since case law states that:

"a mere suggestion in the prior art of the expiration of a new technology or a general approach in the prior art that only provides general guidance towards a solution to a problem does not rise to an obviousness."

(See, In re Dow Chemical, 837 F.2d 469, 473 Fed. Cir. 1988).

It is further submitted that, even if a skilled practitioner were aware of both Van der Pol and Tanaka, it would not be readily apparent to the investigator to attempt to combine the thick walled non-flexible flow tubes of Van der Pol (with or without PFA) into the glass flow tube structure of Tanaka. This statement is supported by the affidavit of Dr. Pawlas who states that he would not have been assisted in the slightest in overcoming the many design and manufacturing problems that were solved in connection with the design and development of the present invention by knowledge of the Van der Pol and/or Tanaka patents.

The Examiner solves the above-discussed design and development problems by asserting:

"It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have used the PFA material of Van der Pol for the flow tube of Tanaka for the purpose of providing a material which is **residual** (see, MPEP §2144.06)."

The Applicants have no idea of the "residual" material referred to by the Examiner. The cited MPEP section has been reviewed and found to be of no relevance. It is submitted that the Examiner's comment would appear to be a classic case of hindsight engineering based upon knowledge gained from a reading of the Applicants' application and then utilizing the uncanny accuracy of 20/20 hindsight to assert that it would be obvious to utilize the thick walled PFA flow tube of Van der Pol in the Tanaka patent for the purpose of providing a material which is **residual**. The Examiner's unsupported conclusion that Van der Pol and Tanaka could be combined neglects to state how the many vexing and challenging design problems faced by Dr. Pawlas in his development would be overcome by a person skilled in the art when attempting to implement the Examiner's proposed combination. The Examiner did not offer information as to how the PFA flow tubes could be mounted to a Coriolis flowmeter structure, how the PFA flow tube could be supported, how the PFA flow tube could be operated so as to not be

burdened with the weights and mass of pickoffs and drivers except where necessary, etc. . . . . All of these details ignored by the Examiner were ultimately solved by Dr. Pawlas and his development team which created a structure having no resemblance or similarity to that disclosed by Tanaka and/or Van der Pol. It should also be noted that Dr. Pawlas states in his affidavit that, even if he had been aware of Tanaka and/or Van der Pol, nothing in the two patents, taken singly or in combination, would have been of the slightest value to him in solving the many problems inherent in the design and development of the present invention.

The third reason for the Applicants' traverse of the rejection of claim 1 is that the Examiner's 103 rejection does not meet the legal requirements of a 103 rejection that are required by the MPEP and the case law. The requirements for a 103 obviousness rejection are set forth in MPEP Sections 2142 and 2143, together with their subsections. These requirements are also well set forth by the many decisions of the Court of Appeals for the Federal Circuit.

It is beyond the scope of this RCE amendment to present a treatise on 103 obviousness rejections. It is sufficient to set forth herein a few summary observations regarding the deficiencies of the Examiner's rejection. The last few lines of MPEP §2142 state:

"However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of facts gleaned from the prior art."

The Applicants state that the Examiner's 103 rejection is a classic case of impermissible 20/20 hindsight engineering using facts gleaned from a reading of the Applicants' own disclosure rather than from facts derivable from a reading of the prior art.

The last portion of MPEP §2142 and the first portion of §2143.01 state that the Examiner's cited art must provide motivation to combine the references:

"the nature of the problem to be solved, the teachings of the prior art and the knowledge of persons of ordinary skill in the art. The MPEP states that the combination of references that teach every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case is improper."

The Examiner's 103 rejection of claims 1-44 is devoid of any evidence proving motivation to combine. The format of the Examiner's 103 rejections is to briefly characterize the disclosure of the cited patents and then to conclude with an

unsupported assertion that it would be obvious to combine the two references to anticipate the claim being rejected.

The left column of MPEP page 2100-124 is entitled:

**The fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness.**

The right-hand column of page 2100-124 states that references that are relied upon and that teach all aspects of the claimed invention in individually-known art is not sufficient to establish a primary *prima facie* case of obviousness without some objective reason to combine the teaching of the references. The Examiner's 103 rejection ignores teachings of these two columns of page 2100-124.

MPEP §706.02(j) is further instructive regarding 103 rejections. Page 700-31 of the MPEP, column 1, requires the Examiner to state the proposed modification of the references necessary to arrive at the claimed subject matter and further to give an explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to propose the modification. To provide this evidence, there must be some suggestion of motivation, either in the references themselves or in the general knowledge available to one skilled in the art, to modify the reference or to combine the teachings. The Examiner's rejections are devoid of compliance with these requirements.

The bottom portion of the same page, column 1, also states that the burden is on the Examiner to provide the suggestion of desirability of doing what the Examiner has done. It further states that the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in the light of the teaching of the references. The Examiner made no effort to meet these requirements. Instead, the Examiner's format of a 103 obviousness rejection is to summarize the relevant teaching of the art relied upon, to briefly allude to the differences in the claim over the references, to ignore the issue of motivation and to leap to the final conclusion that it would be obvious to combine the references.

The applicable CAFC case law regarding 103 obviousness rejection is further instructive as set forth near the end of this amendment.



The inadequacy of the Examiner's 103 rejection of claim 1 may be readily appreciated by briefly reviewing the rejection set forth on pages 2 and 3 of the second office action. The Examiner begins by summarizing what Tanaka teaches and what it fails to teach regarding the recitation of claim 1. At the top of page 3, the Examiner's rejection states what Van der Pol teaches (while ignoring the issue of PFA and enablement). The Examiner's rejection is devoid of any comments regarding motivation. The rejection concludes with the unsupported assertion that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the PFA material of Van der Pol for the tube of Tanaka for the purpose of providing a material which is residual. The Examiner's rejection makes no effort to comply with the many above-discussed requirements of MPEP §2142, §2143.

As a further observation, it appears that the Examiner treats the process of generating a 103 obviousness rejection somewhat the same as a trip through a hardware store where the various elements of the claim are akin to become components in the various bins of the hardware store. The Examiner collects the various recited claim elements from their respective bins, places them in a shopping bag and then asserts that it would be obvious to combine the collected parts to make obvious the Applicants' claimed invention. The issue of motivation to combine the parts is lacking from the rejection of claim 1, and is also lacking in the rejection of each and every one of the 44 claims in the application.

In conclusion, regarding the rejection of claim 1, it should be noted that the version of claim 1 to which the rejection of the second office action was made includes the subject matter of dependent claim 28 of the RCE amendment. The material now in amended claim 28 was formerly in the version of claim 1 acted upon by the Examiner in the second office action. The Examiner's cited art obviously fails to meet claim 28, which states that the flow tube apparatus has high flexibility and a stiffness substantially lower than a flow tube formed of metal or glass. Tanaka fails to meet this recitation because of its glass flow tube. Van der Pol also fails to meet this recitation since the Van der Pol flow tube segment deliberately lacks high flexibility. This lack of high flexibility is required by Van der Pol to prevent a shifting of the axial center portion of the flow tube. Van der Pol would have this deficiency regardless of whether its flow tube was made out of metal or made out of PFA as alluded to but not enabled by Van

der Pol. Even if the Van der Pol flow tube were made out of PFA, it would not have high flexibility and would be sufficiently rigid throughout its length except for its center portion proximate the radial grooves. This is required to achieve the purposes of the Van der Pol flow tube segment. Finally, there is no evidence of motivation to combine in either Van der Pol or Tanaka; and the Examiner has provided no evidenced of motivation to combine. Therefore, claim 28 of this RCE amendment is allowable over the prior art.

RCE claim 1 corresponds to claim 1 as originally filed. It distinguishes from the Examiner's cited combination by the recitation of a flow tube apparatus formed of a material that does not transfer ions to said process material. The cited combination fails to meet this recitation since the mere suggestion in Van der Pol that the flow tube section could be made from PFA is not sufficient to establish obviousness since it does not teach one skilled in the art to which the invention pertains how to incorporate PFA into a flow tube of a working flowmeter in view of the many problems that must be first overcome. This is discussed in detail in the Rule 132 affidavit of Dr. Pawlas. This is also discussed by the Applicants in their first amendment.

Both the Applicants' first amendment and Dr. Pawlas' Rule 132 affidavit discuss how the substitution of one material for another presents only minor problems if the functionality of the object (such as a rolling pin) containing the substituted material is not changed. The Applicants' first amendment and Dr. Pawlas' affidavit state that the substitution of one material for another can present challenging design and development problems if the functionality of the structure containing the substituted material is altered by the material substitution. In these cases, the problems created by the substitution are challenging and significant. Thus, the mere suggestion pertaining to PFA by Van der Pol is not enabling and sufficient to form a combination with Tanaka for a valid 103 obviousness rejection. It should also be mentioned that, even if Van der Pol's suggestion of PFA could be considered enabling, the only thing enabled would be the flow tube segment shown by Van der Pol. This flow tube segment is of necessity thick walled, is relatively stiff throughout the entirety of its length except for its center portion where it has radial groves to receive transducers. Only the center portion proximate the transducers has sufficient flexibility to respond to the Coriolis deflections.

This is required by Van der Pol so that the axial midpoint of his flow tube segment does not shift in response to Coriolis deflections.

Thus, the Van der Pol structure that the Examiner proposes to combine with Tanaka would be thick walled and non-flexible. It should also be understood that the suggestion regarding PFA in Van der Pol is limited to the structure shown by Van der Pol. This suggestion of PFA in Van der Pol is not a license to assert that any Coriolis flow tube could be formed of PFA on the basis of the suggestion in Van der Pol. His suggestion is limited to his flow tube structure and not ubiquitously applicable to other Coriolis flowmeters and flow tubes.

Independent claim 26 is detailed and contains many limitations above and beyond those recited in claim 1. Yet, it was rejected over the Van der Pol/Tanaka combination with the Examiner discussing only the limitation in claim 26 which states that the entirety of the wedged path of the flowmeter comprises PFA material. The Examiner asserted that this limitation is met by the suggestion of Van der Pol to use PFA for his flow tube segment. The many other structural details that are recited in claim 26 were totally ignored by the Examiner. The rejection of independent claim 26 is respectfully traversed for the same reasons as discussed for the rejection of claim 1. The rejection of claim 26 is also respectfully traversed as being improper per se insofar as it can be understood, since the Examiner gave no consideration to most of the elements recited in claim 26. This violates MPEP 2143.03.

Discussion of the Rejection of the Dependent Claims 2-4, 7, 9-12, 15, 19-21, 23, 24, 30, 36, 42 and 43

RE: Dependent Claim 2

The rejection of dependent claim 2 is traversed as being legally inadequate and not understandable. It is legally inadequate because it lacks the required evidence of motivation to combine required for an obviousness rejection. See MPEP 2143.01 citing Expare Levengood, 28 USPQ 1300 (Bd. of Appeals 1993). The Examiner's format for an obviousness rejection is to state what each patent discloses and then skip to an assertion that it would have been obvious to combine the two patents. This is a fatal flaw that renders the rejection legally insufficient. The Examiner is respectfully reminded that claim 2 is not an independent claim. It is dependent upon claim 1. Any discussion of obviousness must include a discussion of parent claim 1 and why the

subject matter comprising claim 1 plus claim 2 would be obvious. The rejection must include more than the unsupported assertion that "it would be obvious" to substitute a straight tube for a curved tube. The Applicants are unable to understand or respond to the claim 2 rejection since the Examiner refers to Tanaka as having a "straight measuring tube" in the Van der Pol flowmeter. The Examiner's statement is replete with errors. The first error is that Tanaka does not disclose a "straight measuring tube." The second error is that Van der Pol does not disclose a flowmeter. Tanaka discloses curved glass measuring tubes; Van der Pol discloses a flow tube segment - not a flowmeter. The Applicants are unable to respond to the rejection of claim 2 since they cannot understand the combination proposed by the Examiner. They specifically cannot understand how the straight flow tube segment of Van der Pol could be combined with the curved glass flow tubes of Tanaka which have a complex support and mounting structure specially provided to accommodate curved glass flow tubes. If the Examiner intends to pursue this rejection of claim 2, it is respectfully requested that the Examiner explain what is being combined with what and where is the evidence of motivation to combine for achieving the proposed combination.

RE: Dependent Claim 3

The rejection of dependent claim 3 is legally deficient and not understandable for the same reasons cited for the rejection of dependent claim 2. The Examiner ignores evidence of motivation to combine. The rejection of claim 3 reads as if it is an independent claim. A rejection of dependent claim 3 must include a discussion of what it adds to its parent claim 1 followed by a detailed discussion of the references including evidence of a motivation to combine. The rejection of claim 3 is nothing more than an assertion of what Tanaka fails to teach followed by an assertion of what Van der Pol allegedly teaches. The rejection does not even assert that "it would be obvious to combine the two references." The rejection is devoid of evidence of motivation to combine. The Applicants respectfully traverse the rejection of claim 3 since they do not understand the combination proposed by the Examiner nor how the straight flow tube segment of Van der Pol could somehow be merged with the curved glass flow tubes of Tanaka. The Applicants also assert that the statement in Van der Pol regarding PFA is not enabling for reasons priorly discussed.

The rejection of independent claim 26 (priorly discussed) cannot be understood. The Examiner's comments relate only to claim 3 and not to claim 26 which is earlier discussed with the rejection of claim 1.

RE: Dependent Claim 4

The rejection of claim 4 cannot be understood. It is nothing more than a statement that Tanaka teaches more than one flow tube. This statement is literally true but not dispositive. A rejection of dependent claim 4 must include a discussion of both claim 4 as well as its independent claim 1, together with a discussion of the combination of references relied on by the Examiner together with evidence of motivation to combine.

RE: Dependent claims 7 and 30

The rejection of claims 7 and 30 suffers from the same deficiencies priorly discussed in connection with dependent claims 2, 3 and 4. The Applicants' comments regarding dependent claims 2, 3 and 4 are hereby incorporated by reference into their response to the rejection of claims 7 and 30. The Applicants are unable to respond further to the rejection of claims 7 and 30 because they cannot understand the Examiner's rejection or the art relied upon. The rejection lacks evidence of motivation to combine. The Applicants therefore respectfully traverse the rejection of dependent claims 7 and 30.

RE: Dependent Claims 9, 19, 10, 32, 11, and 24

The rejections of dependent claims 9, 19, 10, 32, 11 and 24 are traversed as being legally deficient and not understandable for the same reasons set forth above with regard to the preceding dependent claims. Claims 9, 19, 10, 32, 11 and 24 are dependent claims; a proper rejection must include a discussion of each of these claims together with a discussion of their parent claims. The rejection must discuss the art relied upon by the Examiner as well as evidence of motivation to combine. The Examiner's format of rejection is to state only the structure recited in the dependent claims. Tanaka was used in each of these rejections with no other cited art. Since the parent claims were not discussed, Applicants are unable to respond to the rejection. The dispositive issue for each of these dependent claims is whether the Examiner's cited art makes obvious the combined structure of each dependent claim as well as the parent claims upon which each depends. Because of these deficiencies, the Applicants

are unable to meaningfully respond because they are unable to understand the Examiner's rejection. It should be noted that the rejections of these claims does not include any assertion of obviousness, let alone evidence regarding motivation to combine.

RE: Dependent Claim 12

The rejection of claim 12 is respectfully traversed for the same reasons stated for the preceding dependent claims. Claim 12 states, in essence, that the Coriolis flowmeter comprises a single flow tube together with a base having a mass substantially greater than the mass of the flow tube with process material. Claim 12 is dependent upon parent claim 1. The format for the Examiner's rejection of claim 12 begins with Tanaka followed by an admission that Tanaka fails to teach a base having a mass substantially greater than the mass of the flow tube with process material. The Examiner avoids any consideration of the merits of claim 12 by relying upon 20/20 hindsight and assertion that "it would be obvious to modify Tanaka to have a base of increased mass." No evidence for this assertion is presented. The Applicants are therefore unable to further respond. The Applicants are also unable to further respond to the rejection since they do not know whether the Examiner is relying solely upon Tanaka or is relying upon other art in combination with Tanaka. It strains credulity to believe that the Examiner is relying only upon Tanaka for the entirety of the structure embodying dependent claim 12 as well as its independent parent claim 1. None of the art discusses the mass of the base.

RE: Dependent Claims 15 and 36

The rejection of dependent claims 15 and 36 is traversed as being legally insufficient and not understandable for the same reasons discussed above in connection for the preceding dependent claims. The rejection lacks evidence of motivation to combine. The Examiner is in error in the assertion that Tanaka teaches a driver 71 affixed to the top of a single flow tube when in use (FIGURE 1A). FIGURE 1A of Tanaka discloses a pair of flow tubes rather than the single flow tube. Further, driver 71 is not affixed to a single flow tube as required by claims 15 and 36. Instead, Tanaka's driver 71 is affixed to a cross member 14 which, in turn, is coupled to a pair of curved flow tubes 10 rather than to a single flow tube as asserted by the Examiner. This rejection need not be discussed further because of the Examiner's many errors

which do not accurately characterize Tanaka. Even if the Examiner were correct regarding the Tanaka structure, the rejection still must fail because it is devoid of any discussion of a motivation to combine for the Van der Pol/Tanaka combination to meet the recitation of Applicants' dependent claims 15 and 36 together with the structure of the parent claims upon which these claims depend.

RE: Dependent Claims 20 and 23

The rejection of dependent claims 20 and 23 is respectfully traversed as suffering from the same deficiencies as the rejections of the dependent claims discussed in the preceding paragraph. Both dependent claims 20 and 23, in essence, recite a pair of flow tubes positioned parallel to each other and vibrated in phase opposition by a driver. The dispositive issue regarding these claims is not whether Tanaka discloses such structure but rather, whether the structure recited in claim 1 is made obvious by the Examiner's proposed combination of Tanaka and Van der Pol. In order to possess merit, the rejection must contain evidence of motivation to combine the structure of dependent claims 20 and 23 considered separately with parent claim 1. Following this, the rejection must include evidence of motivation to combine Van der Pol and Tanaka with respect to claim 1. The Examiner provided no evidence of a motivation to combine claims 20 or 23 with claim 1. The entirety of the Examiner's rejection is devoid of any evidence supporting a motive to combine Tanaka and Van der Pol with respect to the rejection of claim 1, either by itself or with any of its dependent claims, including 20 and 23.

RE: Dependent Claim 21

The Applicants respectfully traverse the rejection of claim 21 for the same reasons priorly discussed for the rejections of claims 20 and 23. The dispositive issue is not whether the structure of claim 21 can be found somewhere in the Coriolis art and then be applied, without more, by the Examiner. Instead, the issue is whether it would be obvious to combine the structure of claim 21 with the structure of claim 1 following proof of motivation to combine Tanaka and Van der Pol both prior to and following a modification of the claim 1 structure by claim 21.

RE: Dependent Claims 42 and 43

The rejection of dependent claims 42 and 43 is respectfully traversed for the same reasons discussed in the preceding paragraph regarding the rejection of

dependent claim 21. Claims 42 and 43 are revised by this RCE amendment as subsequently discussed. It should be noted that claim 43 was rejected twice by the Examiner. This is confusing.

#### Discussion of the Rejection of Dependent Claims 5 and 28

Dependent claims 5 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka in view of Van der Pol when applied to claim 1 and further in view of Kalotay, et al. (5,349,872). Dependent claims 5 and 28 recite, in essence, that the recited pickoff means of the parent claims comprises a magnet connected to recited flow tube apparatus as well as a coil. This rejection is respectfully traversed as being insufficient because of a failure to provide evidence to support the modification proposed by the Examiner. The dispositive issue is not whether Kalotay discloses a pickoff comprising a magnet and a coil. Instead, the dispositive issue is whether the Examiner provides evidence supporting a motivation to combine the structure of claims 5 and 28 with their parent claims as well as provides evidence of a motivation to combine Tanaka and Van der Pol with respect to the parent claims. Since the Examiner has presented no evidence of motivation to combine, the Examiner's obviousness rejection is insufficient for the parent claims as well as for the proposed combination of dependent claims 5 and 28. Claim 28 is revised by this RCE amendment as subsequently discussed.

#### Discussion of the Rejection of Dependent Claims 6 and 29

The rejection of dependent claims 6 and 29 as being obvious in view of Tanaka in view of Van der Pol and further in view of Kalotay (5,400,653) is respectfully traversed for the same reasons as asserted for the rejection of dependent claims 5 and 28. Once again, the Examiner's rejection is devoid of the evidence of motivation to combine or modify. Instead, it amounts to nothing more than an unsupported conclusion that the proposed modification to the parent claims to incorporate the Kalotay structure would be obvious. Dependent claims 6 and 29 are both directed to an optical detector and have been amended to better distinguish from the optical detector of Kalotay. A fundamental difference between the Kalotay optical detector and the claimed optical detector is that Kalotay uses the microbending parameter of a fibre optic coupled to the flow tube to detect Coriolis deflections. The Applicants' optical detector uses a light source and an optical detector that interrupts a light beam whose travel



between the light source and optical detector is interrupted and modulated by the Coriolis vibrations of the flow tube. This amendatory change should render the rejection of dependent claims 6 and 29 moot. Claims 6 and 29 are revised by this RCE amendment as subsequently discussed.

Discussion of Rejection of Dependent Claims 8, 18, 25, 31 and 33

Dependent claims 8, 18, 25, 31 and 33 were rejected as being unpatentable over the combination of Tanaka, Van der Pol, and Takeuchi (6,224,110). This rejection is respectfully traversed for the same reason priorly discussed. This rejection of these claims is devoid of any evidence of motivation to combine or modify or make obvious the combination of elements recited by each of these claims when each is separately combined with its parent claim. Claims 8, 25 and 31 recite a base that is substantially U-shaped together with openings in side walls to receive flow tube apparatus. Claim 33 recites a single flow tube and a return flow tube that extends beyond the outer surface of each leg. The Examiner lumped the rejection of these claims together; discussed the U-shaped base configuration, disregarded evidence regarding motivation to combine or modify, and asserted that it would be "obvious" to use a U-shaped base in the Tanaka/Van der Pol combination. This rejection is respectfully traversed. The Takeuchi patent discloses a vibration sensor having a complex massive base as shown on 74 sheets of drawings containing 76 drawing figures. In view of the complexity of the Takeuchi disclosure combined with the total lack of information by the Examiner as to how Takeuchi could be combined with Van der Pol and Tanaka, the Applicants are unable to respond further since the Examiner has provided insufficient information regarding the proposed structural combination to enable the Applicants to understand the issues involved. This rejection is traversed as being insufficient, as lacking evidence of a motivation to combine and further lacking detailed information regarding the combination envisioned by the Examiner for the rejection. This rejection further contained the assertion that:

"Applicant is not given any advantage over using this shape base, therefore any shape would result in the same outcome. (See, MPEP §2144.04)."

This statement is not understood. MPEP §2144.04 has been reviewed and found to be irrelevant. The Applicants are not claiming a base per se. They are claiming a Coriolis flowmeter having a U-shaped base configured as claimed. The reasons as to why it is

advantageous for the Applicants' flowmeter to use the U-shaped base of these claims is set forth in the description of the application as well as in Dr. Pawlas' Rule 132 affidavit. This U-shaped base comprises a part of the claimed structural combination that the Applicants assert to be their invention. The Applicants are not aware of any legal authority that requires them to "prove advantages" for elements defined in their claims. The Examiner is respectfully referred to the application and Dr. Pawlas' Rule 132 affidavit for information on the claim elements, including the U-shaped base. The last portion of the Examiner's statement asserts that "any shape would result in the same outcome." This statement is not fully understood, but, to the extent it is, Applicants assert that the statement is in error and devoid of merit. "Any shape of base" would not have resulted in the same outcome as achieved by the Applicants in their research, design and development of the disclosed Coriolis flowmeter. The Applicants are claiming a U-shaped base - not any shape. If the Examiner wishes to pursue this issue, it is respectfully requested that information including proof that "any shape would give the same outcome" be provided. The Examiner must include the legal authorities relied upon pertaining to the necessity of advantages and "providing results in the same outcome."

#### Discussion of Dependent Claims 13, 14, 40 and 41

Claims 13, 14, 40 and 41 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Tanaka/Van der Pol combination as applied to claim 12 and further in view of Drahm (6,360,614). These dependent claims, in essence, recite that the mass of the base is alternatively either 1,000 times the mass of the flow tube with process material or 100 times the mass of the single flow tube with process material. This rejection is respectfully traversed for the same reasons discussed in connection with the rejections of the preceding dependent claims. This rejection is also respectfully traversed as being legally deficient for failure to disclose evidence of motivation to combine or modify to achieve the combination relied upon by the Examiner. The Drahm patent was apparently cited as having a base that is "at least five times as large as the mass of a pipe or tube." This is irrelevant. Dr. Pawlas' Rule 132 affidavit explains in detail how the mass of the base is a critical part of the claimed invention so as to enable the provision of a Coriolis flowmeter having a vibrationally unbalanced structure comprising a flow tube. The function of a base having the proper mass is

critical to the operation of the flowmeter so that it will not be subject to destructive vibrations. This is achieved by the provision of a base having the mass defined by these claims to act as a counterweight to the unbalanced flow tube and thereby enabled the entire flow tube to be a dynamically structure.

Claims 40 and 41 are revised by this RCE amendment as subsequently discussed.

#### Discussion of the Rejection of Dependent Claims 16, 17, 34, 35, 37, 38 and 43

Dependent claims 16, 17, 34, 35, 37, 38 and 43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka/Van der Pol as applied to claims 12 and 26 in view of Van Cleve (6,363,794). This rejection is respectfully traversed for a number of reasons. First of all, these claims are dependent upon parent claims (1 and 26) which received a defective obviousness rejection as priorly discussed. Since these parent claims have not been properly rejected, they should be deemed to be allowable which, in turn, would make allowable all claims dependent thereon. MPEP 2143.03 citing, *In re Fine*, 5 USPQ 2d 1956 (CAFC 1988). The second reason for traverse is that these claims received a defective obviousness rejection devoid of any evidence of motivation to combine or modify. The Examiner's format for obviousness rejections is to identify the structure of the prior art relied upon by the Examiner, and then ignore any discussion of motivation and jump to the conclusory unsupported assertion that it would have been obvious to modify or combine the art cited to make obvious the Applicants' claims. Thirdly, the Examiner ignored MPEP 2143.03 and *In re Wilson* 424 F2d 1382 (CCPA 1970) by disregarding the specific wording of the dependent claims in the rejection. Claim 16 required that the dynamic balancer be coupled to the base . . . . This is not shown in the cited Van Cleve document where the dynamic balancer 908 is coupled to the balance bar 902. This is better shown on FIGURE 9 of Van Cleve where the dynamic balance bar 908 is shown connected to the balance bar 902. Van Cleve does not disclose a base. It appears that the Examiner completely ignored the specific wording of claim 16 contrary to *In re Wilson*, supra. Claim 16 has been amended to recite "affixed to said base" rather than "coupled." This further distinguishes claim 16 from the cited art.

Claim 17 is dependent upon claim 16 and recites an active dynamic balancer. The dynamic balancer of Van Cleve (908) is of the passive type and not active type.

Therefore, claim 17 is patentably distinguishable from the cited art. Claim 34 recites a single flow tube that is substantially straight. Claim 34 has nothing to do with the subject matter of the other independent claims in this group. The issue of a straight, single tube flow meter has been priorly discussed in connection claim 2. The rejection of claim 34 is further fatally defective as being based upon a legally deficient obviousness rejection of its parent claim 26 which in itself ignored In re Wilson, supra. The rejection of claims 37 and 38 are deficient since the Van Cleve document does not disclose a dynamic balancer as priorly discussed. The rejection of dependent claim 43 is not understood since it was not discussed in the Examiner's comments in Section VI of the office action. Claim 43 relates to the non-resident frequency of the vibration of the flow tube and not to the dynamic balancer art. The frequency of vibration of the flow tube has been priorly discussed in connection with other claims. Claim 43 is dependent upon independent claim 26 which received a legally defective obviousness rejection that ignored MPEP 2143.03 and In re Wilson.

It should be noted that claim 43 was rejected twice for separate reasons on different pages of the office action. This is confusing.

This rejection of claim 17 is further traversed as being inaccurate. The reason is that the Examiner asserts that it would have been obvious to have used a balance bar and meter electronics of Van Cleve in the flow tube of Tanaka to cancel or minimize rotation of the balance bar. This rejection is not understood since Tanaka does not have a "balance bar." It has two U-shaped flow tubes which do not require a balance bar. Clarification is required.

The dependent claims of paragraph 7 of this second office action relate to minimizing the vibrations of Applicants' flow meter. The relevance of the Examiner's statement regarding a reduction of vibrations of the balance bar is not understood and irrelevant. The Examiner's comment regarding the combination of Van Cleve and Tanaka makes no mention of the Van der Pol portion of the Tanaka/Van der Pol combination. As a result, the Applicants do not understand the statements of the Examiner nor their relevance to the present issue. The statement by the Examiner urging that Tanaka be modified to use the balance bar of Van Cleve exhibits a total lack of understanding of the disclosed and claimed invention. An objective in the development of Applicants' flowmeter was to provide a flowmeter having a flow tube as

light as possible for the purpose of increasing the Coriolis sensitivity of the flowmeter. This was done by using a featherweight flow tube comprising the PFA material which is stated in the specification to be substantially equal or less than the diameter of a conventional soda straw. The Applicants' design efforts also included, where possible, an avoidance of the application pickoffs to the flow tube by the use of optical detectors. All of this was done to make the flow tube as light as possible and as sensitive as possible to induced Coriolis deflections. Therefore, the Examiner's suggestion that the flow tube of Van Cleve be used together with the balance bar resonator 908 and its accompanying mass proves that the Examiner's comments are based upon hindsight engineering with little understanding or appreciation of the innovative design details embodied in the Applicants' flowmeter. The Examiner also asserts that one would want to use the balance bar in the Tanaka flowmeter to anticipate Applicants' claims is not understood since the Applicants' flow tubes are not coupled to or associated with a balance bar such as element 902 shown by Van Cleve. The Applicants' invention does not disclose a balance bar. Alternative embodiments of the Applicants' invention include a single flow tube which is dynamically unbalanced but maintained in dynamic balance overall by the use of a massive base. Other alternative embodiments include a plurality of flow tubes. But none of the Applicants' embodiments include a balance bar. The Examiner is requested to specifically respond to this rejection by indicating with specificity and particularity how the balance bar of Van Cleve would be used in a Tanaka flow meter, which does not require a balance bar, how it would be connected and the function the Van Cleve balance bar would perform. Until this information is provided by the Examiner, the Applicants cannot respond in a meaningful manner to the rejection of these claims.

Claims 38 and 43 are revised by this RCE amendment as subsequently discussed.

#### Discussion of the Rejection of Dependent Claim 22

Dependent Claim 22 was rejected under 35 U.S.C. §103(a) as being unpatentable over the Tanaka/Van der Pol combination as applied to claim 20 and further in view of Lew (5,078,014). This rejection is respectfully traversed. Claim 22 is dependent upon claim 20 which in turn is dependent upon claim 1. Claim 1 received a legally defective obviousness rejection and therefore should be allowable. The

allowability of claim 1 makes allowable all claims dependent thereon, including claims 20 and 22. This rejection of claim 22 is further traversed as being legally defective. The Examiner asserted an obviousness rejection lacking evidence of motivation to combine or modify. If the Examiner should dispute this assertion, the Examiner is respectfully requested to provide detail as to how the series connected flow tubes of Lew could be used in the Tanaka meter which discloses a pair of parallel connected substantially U-shaped glass flow tubes. The Examiner should also provide information regarding motivation and indicate why one would be motivated to modify Tanaka as proposed by the Examiner. This response by the Examiner should indicate why would one wish to do the modification and what beneficial result would be achieved by the modification. Such evidence as this is necessary in order to indicate whether or not the Examiner's rejection of claim 22 is based upon 20/20 hindsight using information gleaned from a reading of the Applicants' own disclosure.

#### Discussion of the Rejection of Dependent Claim 27

Dependent claim 27 was rejected over the Tanaka/Van der Pol combination as applied to claims 1 and 26 and further in view of Lanham (6,450,042). This rejection is respectfully traversed for a number of reasons. The first reasons is that claim 27 is dependent upon claim 26 which received a defective obviousness rejection and therefore should be allowable. The allowability of parent claim 26 would render claim 27 similarly allowable. The second reason for traverse is that the Examiner failed to present evidenced of motivation to combine or modify. Instead, the rejection format of dependent claim 27 is a brief discussion of the prior art followed by an asserted conclusion of obviousness. The conclusion is based on the unfounded assertion that "it would be obvious to glue the flow tubes rather than mold them as shown in Lanham, et al." Another reason for traverse is that the Examiner did not discuss all elements of claim 27 which recites a plurality of elements including a return tube, end tubes, an inlet, an intermediate tube, an outlet connector, and an exit tube. Instead of considering and discussing this entire structure as required by MPEP 2143.03 and In re Wilson, supra, the Examiner focused only on a recitation of end portions of the return tube being glued to a base. The Examiner thus failed to consider the entirety of the structure recited in claim 27. Also, there is no evidence by the Examiner proving that it would be obvious to glue, rather than mold, the parts of Applicants' flowmeter. The

fabrication of a flowmeter by molding rather than gluing is a complex issue and it involves many design issues as discussed in Dr. Pawlas' affidavit. Claim 27 cannot be dismissed by a casual unsupported assertion that Lanham's molding and that the Applicants' gluing are the same. The design, development and manufacture of the Applicant's flowmeter is based upon their conscious decision to use PFA material for the flow tubes and connectors that secure the PFA flow tubes to the base. This is what the Applicants designed; this is what they disclose in their patent application; and this is what they are entitled to claim as their invention. The issue of the allowability of dependent claim 26 cannot be so casually dismissed as was done by the Examiner with an incomplete consideration of all of the elements of claim 27 followed by the assertion that molding and gluing are the same. Since this rejection is dependent upon the Tanaka/Van der Pol combination, the Examiner is respectfully requested to indicate how the Lanham molding process for fabricating a flow tube could be used with the glass flow tube structure of Tanaka when combined with Van der Pol in a manner not explained by the Examiner nor understood by the Applicants.

#### Discussion of the Rejection of Dependent Claim 39

Dependent claim 39 was rejected under 35 U.S.C. §103(a) as being unpatentable over the Tanaka/Van der Pol combination as applied to claim 26 and further in view of Alesz, et al. (5,627,326). This rejection is respectfully traversed. Claim 39 was dependent upon claim 35 which, in turn, is dependent upon independent claim 26. Independent claim 26 received a legally deficient obviousness rejection that renders claim 26 allowable and, in turn, its dependent claim 39 allowable. Further, the Examiner's comments for the rejection of claim 39 are devoid of evidence of motivation to modify or combine and amount to nothing more than an unsupported conclusion of obviousness based upon hindsight. Claim 39 has been amended as discussed in the next section of this RCE amendment.

#### Discussion of Newly Amended Dependent Claims 6, 28, 29, 38, 39, 40, 41, 42 and 43

Newly amended claim 6 is dependent on claim 1 and is directed to an optical pickoff comprising a light source that emits a beam and an optical detector for receiving the beam. Amended claim 6 recites that the emitted beam is transverse to the flow tube and positioned on opposite sides of the flow tube. The amended claim is now more specific by the present amendment and should clearly distinguish from the

Kalotay reference which uses an optical fibre, rather than a light beam, and functions to detect Coriolis vibrations by utilizing the micro bending characteristics of an optical fibre.

Claim 28 is now dependent on claim 1 and has been amended to incorporate material deleted from claim 1 that states in essence that the flow tube apparatus has high flexibility and also has a stiffness substantially lower than flow tube apparatus formed for metal or glass. This clearly distinguishes claim 28 from the glass flow tube of Tanaka as well as from the stiff Van der Pol flow tube which is formed of thick walls for the purposes of providing a flow tube that is relatively immune to Coriolis deflections over its axial length except for in its longitudinal center portions proximate the radial grooves in the flow tube. According to Van der Pol, this characteristic prevents shifting of the longitudinal center portion of the flow tube during Coriolis deflections and thereby improves the accuracy of the output information generated by such a flow tube when incorporated in a flowmeter.

Claim 29 is now dependent on claim 1 and has been amended to recite flow tube apparatus that has walls substantially thinner than the diameter of the inner portion of the flow tube through which the material flows. This distinguishes claim 29 from the Van der Pol flow tube which has a thick wall compared to the diameter of the inner portion of the flow tube.

Dependent claim 38 is now dependent on claim 1 and has been amended to recite, in essence, a single flow tube having a base that is substantially U-shaped and that has a mass substantially greater than the mass of the flow tube with process material. This characterizes the flow meter defined in claim 1 as having a single flow tube which operates in a dynamically unbalanced state and requires the presence of a base having a sufficient mass to absorb the vibrations of the flow tube so as to prevent undue shaking and movement of the entire flowmeter structure when operated. Claim 38 should now be allowable.

Dependent claim 39 is now dependent on claim 1 and has been amended to recite that the drive frequency has a deflection over the entirety of the axial length of the active portion of the flow tube and further has a Coriolis deflection that extends over the entirety of the axial length of the flow tube apparatus. This defines an operation best shown in FIGURE 5 of the cited Van Cleve reference wherein the top portion of the



figure portrays the response to flow tube 203 to the drive frequency. Immediately below is shown the response to the flow tube, in exaggerated form, to the Coriolis deflections. This distinguishes claim 39 from Van der Pol where the Coriolis deflections are deliberately limited to the longitudinal center portion of the Van der Pol flow tube proximate the radial grooves. The entirety of the axial length of the Van der Pol flow tube cannot be said to have Coriolis deflections that extend over the entirety of the axial length of the active portion of the flow tube. This limited Coriolis deflection length is required by Van der Pol to prevent the axial center portion of the flow tube from axially changing due to Coriolis deflections.

Dependent claim 40 is now dependent on claim 1 and has been amended to recite a single flow tube having a massive base to define a dynamically unbalanced structure that requires the presence of the massive base to absorb the vibrations of the unbalanced flow tube. Amended claim 40 should be allowable.

Amended dependent claim 41 is now dependent on claim 1 and is similar to amended claim 40 and recites a single unbalanced flow tube that requires a massive base having vibrational communication with the flow tube to balance the flow tube structure. The details of the structure recited by claims 40 and 41 are not shown in any of the cited prior art or taught by any of the cited prior art.

Newly amended dependent claim 42 is now dependent on claim 1 and states that the flow tube apparatus has a substantially constant outer diameter. This distinguishes from Van der Pol and thereby precludes the use of Van der Pol in combination with Tanaka to form the Van der Pol/Tanaka combination extensively relied upon by the Examiner in the 103 obviousness rejection. Amended claim 42 should be allowable.

Newly amended dependent claim 43 is dependent upon claim 1 and states that the flow tube apparatus is formed of a PFA substance to protect the process material in the flow tube from contamination due to ion transfer from the flow tube apparatus material to the process material. This recitation precludes any interpretation of the claim which might rely upon the false assumption that it is the thickness of the flow tube material, rather than the flow tube material per se, that provides a barrier to prevent process material contamination. This amendment clarifies the nature of the

contamination and limits it to contamination provided by ion transfer from the flow tube material itself to the flowing process material.

It is believed that the above-discussed amendments to amended claims 6, 28, 29, 38, 39, 40, 41, 42 and 43 clarify the invention to which they pertain in a manner that clearly distinguishes them from the art applied by the Examiner.

#### Discussion of the Applicable Case Law

Following are statements from the applicable case law relevant to the issue of combining references for an obviousness rejection.

1. When a patent describes a new mechanical device that can be viewed as a new combination of mechanical components, the legal conclusion of obviousness requires that there be some suggestion, motivation, or teaching in the prior art whereby the person of ordinary skill would have selected the components that the inventor selected and use them to make the new device. C.R. Bared, Inc. v. M3 Systems, Inc., 48 USPQ2d 225 (Fed. Cir. 1998).
2. The mere fact that it is possible to find two isolated disclosures that might be combined in such a way so as to produce a new result does not necessarily render the production obvious unless the art also contains some suggestion of the desirability of the proposed combination. In re, Grabiak, 226 USPQ 870 (Fed. Cir. 1985).
3. The absence of a suggestion in the prior art to combine is dispositive in an obviousness determination. Gambro Lundia AB v. Baxter Health Care Corp., 42 USPQ2d 1378 (Fed. Cir. 1997).
4. The law does not impose upon the patentee the burden of establishing that the combined teaching of the individual prior art references would not have lead one of skill in the art to the invention. The party asserting the invalidity of the art must rely on the references or otherwise has the burden of showing that there is some teaching or suggestion that supports the use of the combination. It is legal error to place this burden on the patentee. Ashland Oil, Inc. v. Delta Resins and Refraks, Inc., 227 USPQ 667 (Fed. Cir. 1985).

5. It is improper to use the inventor's patent as an instruction book on how to reconstruct the prior art. Panduit Corp. v. Dennison Mfg. Co., 1 USPQ2d 1953 (Fed. Cir. 1987).
6. The expected success of a proposed combination must be found in the prior art and not in the applicant's own disclosure. In re, O'Farrall, 7 USPQ2d 1673 (Fed. Cir. 1988).
7. The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine references in order to solve the problem. Northern Tel Com, Inc. v. Data Point Corporation, 15 USPQ2d 1321 (Fed. Cir. 1990).
8. Rejecting patents solely by finding prior art correlaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together the elements in the prior art. Such an approach is illogical and inappropriate in determining patentability. To prevent the use of hindsight based upon the invention to defeat patentability, the law requires that the examiner show a motivation to combine in order to create a case of obviousness. In re, Rouffet, 47 USPQ2d 1453 (Fed. Cir. 1998).
9. The genius of invention is often a combination of known elements that in hindsight seems preordained. To prevent hindsight invalidation of claims, the law requires some teaching, suggestion or reason to combined the cited references. The test to combine references must be applied rigorously. If the references taken in combination would produce a seemingly inoperative device, such references teach away from the combination and cannot serve as predicates for a *prima facie* case of obviousness. McGinley v. Franklin Sports, Inc., 60 USPQ2d 1001 (Fed. Cir. 2001).

The above-numbered comments are excerpts from CAFC case law pertaining to obviousness rejections relying upon a combination of references or modifications to references. The legal principles taught by these cases appear to be applicable to the obviousness rejections applied by the Examiner to claims 1-44. These comments are presented in this portion of the amendment rather than earlier to simplify the Applicants'

response by briefly indicating their traverse of the obviousness rejection for claims 1-44 and then presenting all of these generally applicable comments at the end portion of this RCE amendment. It is submitted that most of these comments are applicable to many of the claims and that each of these comments is applicable to one or more of the Examiner's rejections.

The Applicants have made objections to the technique used by the Examiner in formulating obviousness rejections as well as the format of the objections themselves. It is believed that the Examiner has ignored the requirement for the presentation of evidence of motivation to combine or modify. The Examiner's obviousness rejections may be characterized as beginning with a brief summary of the cited prior art combination followed by a statement that the two references could be combined. This is then followed by an unsupported conclusory assertion that it would be obvious to combine the references in the manner the Examiner asserts.

The Applicants assert that the 103 obviousness rejection based upon the Tanaka/Van der Pol combination is legally insufficient as being devoid of any evidence of motivation to combine or modify. The Examiner's obviousness rejection using Tanaka/Van der Pol against dependent claims 1 and 26 is therefore legally defective. Since all dependent claims are dependent upon independent claim 1 or independent claim 26, a traverse to the obviousness rejection of dependent claims has been made tiresome by the reliance upon independent claims 1 and 26 that were improperly rejected. The Examiner used the same defective rejection format in rejecting the dependent claims by failing to provide any evidence or discussion of motivation to combine or modify. As a result, the Applicants found it unduly difficult to adequately respond to the Examiner's rejections.

In summary, it is Applicants position that none of the Examiner's obviousness rejections are legally supportable. Independent claims 1 and 26 should therefore be allowable. The same can be said of the obviousness rejection applied to the dependent claims which should be allowable.

The preceding as discussed the Applicants' claimed invention at the esoteric level appropriate for 35 U.S.C. §103(a) considerations. At this level, all claims ranging from the broadest (claim 1) to the most detailed claims (claims 26 and 27) have been asserted by the Examiner to be "obvious." It almost might appear that anything and

everything in the field of Coriolis flowmeters could be said to be obvious using the criteria employed by the Examiner. The criteria employed by the Examiner appear to be that a claim is obvious if all of its elements can be found somewhere. Using this criteria, it would appear that the Examiner reads a claim, identifies the recited elements, shops through the Coriolis flowmeter art to find the recited elements even if they are found separately in separate areas of the Coriolis flowmeter art. Having successfully found all recited elements, wherever located, the Examiner then assembles them into a collage. Finally, having assembled them and concludes by asserting that the assembled elements makes the claimed invention obvious.

A few observations from the realities of the commercial world of Coriolis flowmeters may be useful. Applicants' invention comprises a high sensitivity, high accuracy Coriolis flowmeter using PFA flow tubes. This Coriolis flowmeter is temperature compensated and maintains its accuracy over a wide range of changing process material temperatures. The PFA flow tubes prevent contamination of the contained process material due to ion transfer from the material of the flow tube itself to the process material. The Coriolis flowmeter and its PFA flow tubes are generally compatible with components readily available.

The disclosed Coriolis flowmeter is especially useful in high-tech applications where purity of the highest possible level is required to prevent contamination of the process material. Examples of such industry is in the field of semiconductor fabrication where an undesired ion injected into a semiconductor wafer during fabrication could destroy the usefulness of the entire wafer and result in the wafer being discarded with a loss of many thousands of dollars.

The Applicants' flowmeter has been commercially successfully and the Applicants are not aware of a competitor flowmeter. In spite of Applicants' achievements in producing a unique product that is successful and has no known competition, Applicants have received office actions which assert that everything they have claimed to date is "obvious." This assertion of obviousness must be weighed against the lack of any known competition. A relevant rhetorical question might ask that if the Applicants' invention is obvious, why haven't others in the field of designing and developing Coriolis flowmeters employed this obviousness that is so apparent to the Examiner to produce a competing flowmeter in view of the fact that a demand exists for

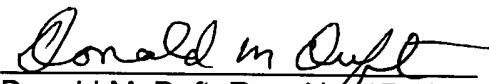
Coriolis flowmeters having the attributes, traits and characteristics of Applicants' Coriolis flowmeter.

If the Examiner has any questions, she is invited to call the undersigned.

Respectfully submitted,

Duft Setter Ollila & Bornsen LLC

Date: 16 July 03

  
Donald M. Duft, Reg. No. 17,484  
Telephone: (303) 546-1300  
Facsimile: (303) 449-5426

**Correspondence Address:**

Customer No: 32827